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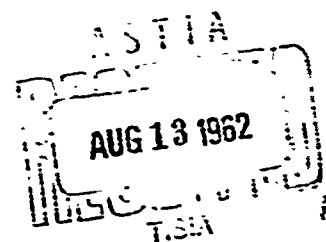
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REPORT NO. FTM-2851
DATE: 26 July 1962

MATERIAL, 2024-T86 ALUMINUM ALLOY -
INFLUENCE OF OVERAGING ON CORROSION
RESISTANCE OF



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GENERAL DYNAMICS | FORT WORTH

TEST DATA MEMORANDUM

FTDM NO. 0001
MODEL 51
TEST NO. 2-11-51

TEST: Material, 2024-T3 Aluminum Alloy - Influence of Overaging
on Corrosion Resistance of

OBJECT: Determine the change in corrosion resistance of the subject
alloy after long time exposure at 325 F.

PROCEDURE: Seven 4FTW244 type panels were exposed
for 1000 hours of time in connection with Test Program
P-400. One 4FTW608-51 type panel was exposed for 6700 hours. Two
corrosion specimens approximately 1/2" x 1" were cut from a panel
which was exposed with the cladding on, the other with the
cladding removed. The corrosion test followed the procedure
per ASTM B 151a, Method C22- "Intergranular Corrosion Test
for Aluminum Alloys." The average depth of intergranular attack
on 2024-T3 was determined on three sections of the corrosion
specimen, established a relative corrosion rating.

RESULTS: The relative corrosion ratings are shown by Table I.

DISCUSSION: The 8th edition of the Metals Handbook states that
artificial aging of artificially aged 2024 alloy does not lower its
resistance to corrosion. The results of this test substantiated
these findings and further showed that there was little difference
in the corrosion rates of the clad vs unclad specimens.

CONCLUSION: Extended exposures at 325F does not essentially alter
the susceptibility of 2024-T3 to corrosive attack.

NOTE: The drawings for the 4FTW244 and 4FTW608-51 type panels are
not included in this report but the location of the test specimens
from the panels is not important. All panels were bonded panels
composed of a core, a slug, glue, and two skins of 2024-T3 clad-
one-side aluminum alloy. The bare side was glued to the core. The
glue was not removed from the bare side of the skin on the specimens
used in this test. Both skins of the 4FTW244 panels were .040 inch
sheet purchased to General Dynamics/Fort Worth specification
FWB-0033. This specification is a modification of QQ-A-362 such
that the only differences are requirements for (1) the mill to roll
the sheet with cladding on only one side and (2) the tensile strength
to be half way between strengths of bare and clad-two-sides sheet per
QQ-A-355 and QQ-A-362. The 4FTW608-51 panel had one FWB-0033 skin
.040 inch thick and the other was an .098 inch thick skin machined on
one side from .125 inch thick QQ-A-362 clad-both-sides sheet.

WITNESS:

DATE: 1-1-52

BY *J. F. Hildick*
CHECKED *J. J. K. G. N. A.*
APPROVED *J. J. K. G. N. A.*

CONVAIR

A DIVISION OF GENERAL DYNAMICS CORPORATION
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TABLE I

Relative Corrosion Ratings for 2024-T86
Exposed at 325F for Extended Times

Panel No. Specimen No.	Exposure Time, Hrs.	CLAD		UNCLAD	
		N*	RCR**	N	RCR
Control 1***	0	35	6.0	48	5.9
4FTM244 815-1A-2	0	17	5.5	26	6.1
813-1B-3	500	17	7.5	23	7.0
815-2A-4	1000	19	6.6	24	5.4
813-2B-5	1500	24	4.6	27	5.6
813-3A-6	2000	7	5.0	22	4.0
815-3B-7	3000	19	3.3	26	4.3
-8	5300	26	5.3	28	5.6
4FTM608-51 861527-6-9	6700	26	6.1	23	5.1
861527-16-10	6700	48	6.1	29	5.1

*N - Number of Measurements

**RCR - Relative Corrosion Rating

*** The material for Control 1 was .040 inch thick 2024-T86 clad-one-side sheet per FMS-0033.